AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A quantum semiconductor device comprising:

a first semiconductor layer formed over a substrate and having a two-dimensional carrier gas formed in;

a quantum dot formed over the first semiconductor layer;

a second semiconductor layer formed over the first semiconductor layer, burying the quantum dot;

a dot-shaped structure formed on the surface of the second semiconductor layer at a position above the quantum dot; and

oxide layers formed on both sides of the dot-shaped structure on the upper surface of the second semiconductor layer.

Claim 2 (original): A quantum semiconductor device according to claim 1, wherein

the dot-shaped structure is caused to form on the surface of the second semiconductor layer

at a position above the quantum dot due to crystal strains generated in the surface of the second semiconductor layer due to the presence of the quantum dot.

Claim 3 (original): A quantum semiconductor device according to claim 1, wherein the quantum dot is in a three-dimensionally grown island self-assembled by S-K mode.

Claim 4 (original): A quantum semiconductor device according to claim 1, wherein the dot-shaped structure is in a three-dimensionally grown island self-assembled by S-K mode.

Claim 5 (currently amended): A quantum semiconductor device according to claim 1, wherein

[[a]] depletion ~~region is~~ regions are formed ~~due to the presence of the oxide layer~~ in ~~a region~~ regions of the first semiconductor layer, which [[is]] are below the oxide ~~layer~~ layers, and

~~a channel region is defined by the depletion region~~ the depletion regions define a channel region.

Claim 6 (original): A quantum semiconductor device according to claim 5, further comprising:

source/drain regions connected to both ends of the channel region.

Claim 7 (original): A quantum semiconductor device according to claim 1, further comprising:

a gate electrode connected to the dot-shaped structure.

Claim 8 (original): A quantum semiconductor device according to claim 1, wherein a distance between the two-dimensional carrier gas and the quantum dot is 5 nm or less.

Claim 9 (original): A quantum semiconductor device according to claim 1, wherein the dot-shaped structure is in another quantum dot or an anti-dot.

Claim 10 (original): A quantum semiconductor device according to claim 1, wherein at least a part of the dot-shaped structure is oxidized.

Claim 11 (previously presented): A method for fabricating a quantum semiconductor device comprising the steps of:

forming over a substrate a first semiconductor layer with a two-dimensional carrier gas formed in;

forming a quantum dot over the first semiconductor layer;

forming a second semiconductor layer, burying the quantum dot;

forming a dot-shaped structure on the surface of the second semiconductor at a position above the quantum dot due to strains generated in the surface of the second semiconductor layer due to the presence of the quantum dot; and

forming oxide layers on the upper surface of the second semiconductor layer on both side of the dot-shaped structure with the dot-shaped structure as a mark.

Claim 12 (withdrawn): A method for fabricating a quantum semiconductor device according to claim 11, further comprising, after the step of forming the oxide layer,

the step of forming source/drain regions with the oxide layer as a mark.

Claim 13 (withdrawn): A method for fabricating a quantum semiconductor device according to claim 11, wherein

in the step of forming the quantum dot, the quantum dot in a three-dimensional grown island is self-assembled by S-K mode.

Claim 14 (withdrawn): A method for fabricating a quantum semiconductor device according to claim 11, wherein

in the step of forming the dot-shaped structure, the dot-shaped structure in a three-dimensional grown island is self-assembled by S-K mode.

Claim 15 (withdrawn): A method for fabricating a quantum semiconductor device according to claim 11, wherein

in the step of forming an oxide layer, the oxide layer is formed by bringing a needle-shaped conductor close to the surface of the second semiconductor layer and applying a voltage between the needle-shaped conductor and the substrate.

Claim 16 (withdrawn): A method for fabricating a quantum semiconductor device according to claim 15, wherein

the needle-shaped conductor is a probe of an atomic force microscope.